

CLAIMS

1. A method of making a fabric from a material comprising the following steps:- feeding material from at least one nozzle onto a moveable belt, wherein said nozzle is moveable for translational movement and the spacing between said
5 nozzle and the belt is adjustable, and wherein flow through said nozzle and translational movement of said nozzle is controlled such that said nozzle dispenses the material in a controlled manner to form the fabric layer-by-layer.
2. A method as claimed in claim 1, wherein a plurality of nozzles are provided in a feed head.
- 10 3. A method as claimed in claim 1, wherein a plurality of nozzles are provided in a plurality of feed heads.
4. A method as claimed in any of claims 1 to 3, wherein the method of manufacturing the fabric comprises selective deposition modelling.
5. A method as claimed in any of claims 1 to 4, wherein the flow of material
15 though the nozzle is quantised.
6. A method as claimed in claim 5, wherein the nozzles together dispense about 12,000 drops per second.
7. A method as claimed in any of claims 1 to 6, wherein the material is a meltable polymeric material having a viscosity in the range from 2 to 200
20 Centipoise measured at 20°C.
8. A method as claimed in claim 7, wherein the material is a meltable polymeric material having a viscosity in the range from 5 to 40 Centipoise measured at 20°C.

9. A method as claimed in any of claims 1 to 8, wherein the material is selected from any of the following either alone or in combination:- polyamides, co-polyamides, polyesters, co-polyesters, amide esters, olefin resins, urethanes, amide urethanes and sulphones.
- 5 10. A method as claimed in any of claims 1 to 6, wherein the material comprises a radiation curable material.
11. A method as claimed in claim 10, wherein the material comprises a UV curable material.
12. A method as claimed in claim 11, wherein the UV curable material is
10 selected from any of the following either alone or in combination:- epoxy acrylates, polyester acrylates, silicone acrylates and urethane acrylates.
13. A method as claimed in any of claims 1 to 12, further comprising feeding from at least one nozzle, a temporary support medium for providing temporary support to said material during manufacture of the fabric layer by layer.
- 15 14. A method as claimed in claim 13, wherein said method further comprises the step of removing the temporary support medium.
15. A method as claimed in claim 13 or claim 14, wherein the temporary support medium comprises a material selected from hot melt resins and waxes.
16. A method as claimed in any of claims 1 to 3, wherein the method of
20 manufacture of the fabric comprises fused deposition modelling.
17. A method as claimed in claim 16, wherein the material is extruded from one or more nozzles.
18. A method as claimed in claim 16 or claim 17, wherein the material is selected from any of the following either alone or in combination:- polyesters,

polyamides, high molecular weight polyethylenes, polyphenylene sulphide, thermoplastic polyurethanes and PEEK.

19. A method as claimed in any of claims 16 to 18, wherein said material is fed to the nozzle as a flexible strand of solid material.

5 20. A method as claimed in any of claims 16 to 19, further comprising providing a temporary support medium for providing temporary support to said material during manufacture of the fabric layer by layer.

21. A method as claimed in claim 20, wherein said method further comprises the step of removing the temporary support medium.

10 22. A method as claimed in claim 20 or claim 21, wherein the temporary support medium comprises a material selected from the following either alone or in combination:- poly(2-ethyl-2-oxazoline), polyvinyl alcohol, polyethylene oxide, methyl vinyl ether, polyvinyl pyrrolidone-based polymers, maleic acid-based polymers and alkali-soluble base polymers containing carboxylic acid and
15 plasticiser.

23. A method as claimed in any of claims 1 to 22, wherein means are provided for feeding an array of machine direction yarns into the fabric.

24. A method of making a fabric by Free Form Fabrication.

25. A method as claimed in any of claims 1 to 24, wherein the fabric is
20 papermachine clothing.

26. An apparatus for making a fabric from a material layer-by-layer, the apparatus comprising at least one nozzle and a moveable belt, the nozzle being operable to feed material onto the moveable belt, wherein the nozzle is moveable for translational movement and the spacing between the nozzle and the belt is

adjustable, and wherein flow through said nozzle and translational movement of said nozzle is controlled such that said nozzle dispenses the material in a controlled manner to form the fabric layer by layer.

27. An apparatus as claimed in claim 26, wherein a plurality of nozzles are
5 provided in a feed head.

28. An apparatus as claimed in claim 26, wherein the apparatus comprises a plurality of feed heads.

29. An apparatus as claimed in any of claims 26 to 28, wherein the apparatus manufactures the fabric by selective deposition modelling.

10 30. An apparatus as claimed in any of claims 26 to 29, wherein the flow through the nozzle is quantised.

31. An apparatus as claimed in claim 30, wherein the nozzles together dispense about 12,000 drops, per second.

32. An apparatus as claimed in any of claims 26 to 31, wherein the material is
15 a meltable polymeric material having a viscosity in the range from 2 to 200 Centipoise measured at 20°C.

33. An apparatus as claimed in claim 32, wherein the material is a meltable polymeric material having a viscosity in the range from 5 to 40 Centipoise measured at 20°C.

20 34. An apparatus as claimed in any of claims 26 to 33, wherein the material is selected from any of the following either alone or in combination:- polyamides, co-polyamides, polyesters, co-polyesters, amide esters, olefin resins, urethanes, amide urethanes and sulphones.

35. An apparatus as claimed in any of claims 26 to 31, wherein the material comprises a radiation curable material.
36. An apparatus as claimed in claim 35, wherein the material comprises a UV curable material.
- 5 37. An apparatus as claimed in claim 36, wherein the UV curable material is selected from any of the following either alone or in combination:- epoxy acrylates, polyester acrylates, silicone acrylates and urethane acrylates.
38. An apparatus as claimed in any of claims 26 to 37, comprising at least one nozzle for distributing temporary support to said material during manufacture of
10 the fabric layer by layer.
39. An apparatus as claimed in claim 38, wherein said apparatus comprises means for removing the temporary support material.
40. An apparatus as claimed in claim 38 or claim 39, wherein the temporary support medium comprises a material selected from hot melt resins or waxes.
- 15 41. An apparatus as claimed in any of claims 26 to 28, wherein the apparatus manufactures the fabric by fused deposition modelling.
42. An apparatus as claimed in claim 41, wherein the material is extruded from one or more nozzles.
43. An apparatus as claimed in claim 41 or claim 42, wherein the material is
20 selected from any of the following either alone or in combination:- polyesters, polyamides, high molecular weight polyethylenes, polyphenylene sulphide, thermoplastic polyurethanes and PEEK.
44. An apparatus as claimed in any of claims 41 to 43, wherein said material is fed to the nozzle as a flexible strand of solid material.

45. An apparatus as claimed in any of claims 41 to 44, wherein a further support material is fed via one or more nozzles for providing temporary support to said material during the manufacture of the fabric layer by layer.

46. An apparatus as claimed in claim 45, wherein said apparatus comprises
5 means for removing the temporary support material.

47. An apparatus as claimed in claim 45 or claim 46, wherein the temporary support medium comprises a material selected from the following either alone or in combination:- poly(2-ethyl-2-oxazoline), polyvinyl alcohol, polyethylene oxide, methyl vinyl ether, polyvinyl pyrrolidone-based polymers, maleic acid-
10 based polymers and alkali-soluble base polymers containing carboxylic acid and plasticiser.

48. An apparatus as claimed in any of claims 26 to 47, wherein the apparatus comprises means for feeding an array of machine direction yarns into the fabric.